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Remarks:

Regarding the rejection of claims 1, 3-7, 13 and 14 under 35 USC 103(a) in view of US 5888270 to Edwards (hereinafter simply "Edwards) and US 3281236 to Meissner (hereinafter simply "Meissner"):

The applicant respectfully traverses the rejection of the indicated claims in view of the combined Edwards and Meissner references.

The applicant traverses the Examiner's grounds of rejection of the indicated claims in view of the combined Edwards and Meissner references.

The Examiner's attention is first directed to the enclosed *Declaration* of Dr. Reuter, an acknowledged authority in the technical field to which the current invention relates. The enclosed *Declaration* is being entered as an Affidavit under 37 CFR 1.132, and its contents are herein incorporated by reference. The reasoning set forward in the enclosed *Declaration* provides grounds why the Examiner's rejection of the claims in view of the combined Edwards and Meissner references are improper.

With regard to the rejection of claims 1, 5-7, the Examiner's grounds of rejection are believed to be improper, as it appears that the Examiner's interpretation of the Edwards reference is that it dicloses an iron-based silicate slag. This is erroneous, as the only disclosure of Edwards is of a chemically distinct calcium ferrite slag. The Examiner's attention I directed to Paragraph 5(a) of the *Declaration* which lists all references to slag in Edwards, while paragraph 5(b) of the *Declaration* states that distinctly different slag systems (in terms of chemistry and characteristics) are used in Edwards and the invention of the presently rejected claims, particularly the invention defined in claim 1.

It is the applicant's position that Edwards does not teach positioning the lance tip so that the injected gas is unable to pass through the lower surface of the slag and the gas is substantially precluded from contacting the copper phase. It first is to be noted that claim 1 specifies a top-submerged lance having a discharge tip at its lower end. That is, the

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lance is in an upright disposition as shown in Figure 3 of the present application and Figure 2 of Edwards; in which it dips down into the bath. The issue is how far the lance dips down into the bath. Claim 1 requires injection into the slag (and, hence, above the copper which is below the slag) by a positioning of the lance tip not disclosed by Edwards. As made clear by paragraph 6 of the Declaration, that positioning is to avoid the very condition Edwards stresses as being necessary. That is, Edwards requires the gas to contact the copper, whereas claim 1 requires that this contact be avoided. Meissner is ostensibly relied on to show that it is purportedly obvious to modify Edwards to avoid achieving the gas contact with the copper Edwards teaches to be necessary. Not only is this untenable based on Edwards, but also the reliance on Meissner for the purpose is untenable. Meissner does not disclose a lance having its lower end injecting into a slag phase and, indeed, the slag phase is simply a by-product of the process of Meissner and can be removed as it forms. Meissner does not disclose an adjustable lance, but only fixed tuyers (which, unlike a lance, do not project into or "lance" any atmosphere or material). More importantly, Meissner teaches the need for injected gas to contact the copper phase, which is in line with Edwards but contrary to claim 1, while Meissner does not inject into a necessarily present slag phase, again contrary to claim 1. These foregoing issues are discussed by paragraphs 7 and 8 of the Declaration.

With respect now to the Examiner's rejection of claims 3 and 4, the applicant traverses the Examiner's assertion that consideration of Edwards in view of Meissner would teach the process of claim 1. This is simply incorrect. The Examiner's attention is directed to paragraphs 5 to 9(a) of the *Declaration* for the rational why the Examiner's position is incorrect. Further, the combination of Edwards and Meissner does not teach a slag phase having a depth of from about 700 mm to about 1.7 m (as in claim 4). Similarly, the combination of Edwards and Meissner does not teach the slag phase depth of from about 500 mm to about 2 m. It then is asserted that it would be expected that the compositions taught by Edwards in view of Meissner would have a similar slag phase with a depth of from about 700 mm to about 1.7 m. Even if this assertion is correct, it is not relevant to the salient differences between claim 1 and Edwards, and also between claim 1 and

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Edwards in view of Meissner, as reasoned in paragraphs 5 to 9(a) of the *Declaration*. If Edwards had used a slag depth as in claim 3 or claim 4, it would simply mean that the lance would have to extend through that slag depth to position the tip (at the lower end of the lance) close to or within the copper phase so that injected gas contacted the copper phase. In contrast, in the present invention, the lance would extend a lesser distance into the slag so that the gas was injected into the slag but did not contact the copper phase below the slag. In the case of Edwards, such a depth of slag is not of use in this regard, whereas it is of use in the invention of claim 1 in preventing the injected gas from reaching the copper phase. This issue is addressed more fully in by paragraph 9(b) of the *Declaration*.

With respect now to the Examiner's rejection of claims 13 and 14, the applicant traverses the rejection and directs the Examiner's attention to the remarks forming paragraph 10 of the *Declaration* which are responsive to the Examiner's rejection.

In view of the foregoing remarks, as well as in view of the remarks presented in the enclosed *Declaration*, reconsideration of and withdrawal of the outstanding grounds of rejection of the indicated claims are solicited.

Regarding the rejection of claims 8 – 12, under 35 USC 103(a) in view of US 5888270 to Edwards (hereinafter simply "Edwards) and US 3281236 to Meissner (hereinafter simply "Meissner"), further in view of WO 01/49890 to Poijarvi (hereinafter simply "Poijarvi"):

The applicant respectfully traverses the rejection of the indicated claims in view of the combined Edwards, Meissner and Poijarvi references.

The Examiner's attention is again directed to the enclosed *Declaration* of Dr. Reuter, an acknowledged authority in the technical field to which the current invention relates. The enclosed *Declaration* is being entered as an Affidavit under 37 CFR 1.132, and its

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contents are herein incorporated by reference. The reasoning set forward in the enclosed *Declaration* provides further grounds why the Examiner's rejection of the claims in view of the combined Edwards, Meissner and Poijarvi references are improper.

The applicant traverses the Examiner's grounds of rejection of the indicated claims in view of the combined Edwards, Meissner and Poijarvi references.

With respect to the Examiner's rejection of claims 8-10, the applicant traverses the rejection and directs the Examiner's attention to the remarks forming paragraph 12 of the *Declaration* which are responsive to the Examiner's rejection.

With regard to the Examiner's rejection of claims 11 and 12, the applicant traverses the rejection and directs the Examiner's attention to the remarks presented in paragraphs 13 and 14 of the *Declaration* which are responsive to the Examiner's rejection

Accordingly, reconsideration of and withdrawal of the outstanding grounds of rejection of the indicated claims are solicited.

Should the Examiner in charge of this application believe that telephonic communication with the undersigned would meaningfully advance the prosecution of this application, they are invited to call the undersigned at their earliest convenience. The early issuance of a Notice of Allowability is solicited.

PETITION FOR A TWO-MONTH EXTENSION OF TIME

Applicants respectfully petition for a two-month extension of time in order to permit for the timely entry of this response. The Commissioner is hereby authorized to charge the fee to Deposit Account No. 14-1263 with respect to this petition. <u>SMALL ENTITY</u> status is claimed.

US Serial No. 10/599570 Page 8 of 8

CONDITIONAL AUTHORIZATION FOR FEES

06 July 2009

Should any further fee be required by the Commissioner in order to permit the timely entry of this paper, including any necessary extension of time petition and fee, the Commissioner is authorized to charge any such fee to Deposit Account No. 14-1263. SMALL ENTITY status is claimed.

Respectfully Submitted;

Andrew N. Parfomak, Esq.

Reg.No. 32,431

Norris, McLaughlin & Marcus, PC 875 Third Avenue, 18th Floor

New York, NY 10022

Tel: 212 808-0700

Enclosure - Request for Continued Examination

Declaration of Dr. Reuter

CERTIFICATION OF TELEFAX TRANSMISSION:

I hereby certify that this paper is being telefax transmitted to the US Patent and Trademark, Office to telefax number: 571 273-8300 on the date shown below:

Evangelina Exarhoulias

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Evaminer Yoshicashi Takeucei Senes No. ## Flied ## | ## January 31, 2007 | Docker | Prince | 102881-15/FF39694/08 THE ROLL TO SEE PROCESS FOR CORRESCONVENTING.

- 11. B 9: A Markus Raular, of Apathrient 5, 284 Williams Road, Toorak, Victoria 3142 Australia, ann an internationally racognised expert in dietal Ligy and resource and neering. have extensive ecademic and industry installugical experience, gained in several count se including South Africa. Germany. The Netherlands and Atlantalla primarily in additions metallurgy (including copper recovery); but also including tempus metallurgy. Thave a B.Erig. Dagree (Honours) Cum Laude) in Chemical Material Process Engineering can be Engi Degree in Waterial Process Engineering and Phill in Expactive Metalluray at from the University of Stallenbosch, South Africs. Thevera Dr. Nabilitation from Aacheh Entversity of Technology Cermany and a D Eag (Octorate in Eaglinaing); also from the University of Stellenbosch: was a Professor of Sustainable Technology and now arrie Professoria Fellow of Melbourne University Australia, and I was Extraordinary Professor of University of Stellenbosch:::| am Professor Emeritus:|Delft University of Test inclosy: the Netherlands::::
 - 2 4 ani a Registered Brefessionali Enginear in South Africa randi a Fellow of the Australian Institute of Engineers. I have presented numerous keynote and invited lectures and supervised many Ph.D. and M.Sc. Projects, while I have authored one technical book pereio ni penelou areggo das nevo par evan la arento pi sensio para pandicio Journals and conference proceedings, and I have participated in many industrial consulting crolects. In the extensive knowledge and experience in relation to the commercial processes for smalling sulphide oxes and concentrates, and for the treatment of mattes That includes knowledge and experience of top submerged large smelting of copper subhide cres and concentrates, and the treatment of copper make for the recovery of place

copper auch les disclosed in US patents 5888270 (the Edwards patent) and US patent application 10/599570 (the present application); A copy of my full CV is attached

- 3. Dave been requested to provide this declaration by an Australian Patent Attorney & ecting for Ausmelt Limited, the essignee for US application 10/599570 1 Hold the position of Chief Executive Technologist activat company. For that purpose it have been provided with:
- (a) a copy of US application 10/598570 (with the parencolains 2 to 3 and 14));

 (b) a copy of a US patent Examiners Office Action indicated as malled on a poliphon 10/598570; and a poliphon 10/598570; and a copy of proparents complising;

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 Jos. Mines Ltd. and Commonwealth Scientific and Industrial Research

 Organisation;

 (ii) US3281236 to Melsener (the Melsener patent) assigned to Adhua C.

 (iii) US3281236 to Melsener (the Melsener patent) assigned to Adhua C.

 (iii) International Publication Number (VC0/A4680A), by Polary et at the Polary publication);

 Polary publication (iii) International Publication Number (VC0/A4680A), by Polary et at the Polary publication);

 (iii) International Publication Number (VC0/A4680A), by Polary et at the Polary publication);
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 - (f) the reference to know beset silicate sag. arce to as required by claim a price in a posent application; and it is a light to the property of the propert The discipance of the Messine peterns is a surrounded by the Messine peterns is a surrounded by the surrounded by the Messine peterns is a surrounded by the surrounded by the

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- Fibi meach of these municipus relateixee in the Edwards palent the say is emer excressy denillacies a calcium territe saa ore slag-composition of a calcium large slacie. pemilebria druga (yang yang). Cacysicaralo ar columna ingsita di Galizyen ng Composition to a Wilsip Still process sist in comparative Example 2 at column 48 is a second calcum emite stag. in the with established practice for the conventing stage of the Misubish orecass. True reference in paleagraph 48 of the Office Action to the Edwards palent disclostrugan kon based subcete elad is sompletely legared; it also assuts in an impultar of the present of the present application and the Edwards patent being overtocked and not laken into account: That difference is in relation to slag required since the contrast to the calcium leaste stag of the Edwards patent claim to the present application is recess tates an Iron pased silicate slag which differs in composition and characteristics from
- 5(c) in action Edwards patent and the process of claim of the present application matte is led to and dispersed in the respective slag phase. In each case, the slag phase necessarily is present and it has a interfece with a combinous copper phase. He contract in me process of the Meissnenpatent stellag phase is not necessarily prasentin that it can be empyed as the produced. Morecyet the slag of the Velscer patern while present close not have at interface with a copper chase, as the stag and coloer chases are separated by a aver of make. Additionally make is not led to the slap of the Masen et batent father the

matte and the stag are produced by the process of the Melssner patent. It therefore is of no relevance that the slag of the Melasner patent is indicated as a silicate slag in which from silicate is taken up.

Lance lib Positionino

6(a): The senience bridging pages 2 and 3 of the Office Action conedly states that the Edwards patent does not teach the lance tip positioning required by claim tipl the present application. However, stating simply this is to fall to take into account the very important decide if the Edwards patent in relation to lance tip positioning necessary in the process. That falling then is exacerbated by a misunderstanding of the discidsure of and incorrect reliance on the Melsener patent, although these matters are dealt." 🚟 with a paragraph 7 herein. It is tendamental to the actual express disclosure of the Edwards paterit that the tip of the lance can not be as required by claim 1 of the present apalication in the process of the Edwards parent there is a layer of a continuous plister Someon present generation of the layer a layer of a confinement of a confinement Deweer Hose eye: 3 in Figure 2 of the Edwards parent the eye: 0 stag phase (18) is snown on top of the layer of blister copper phase (15). The boldizing gas is bjected from the distof a larce at a deput acjace of its the mariace; between the seg and plater copper for the eason, in itia wording of claim i drithe Edwards patent "so as to easure that a substantial comon of the gas contects the continuous plate copper phase since inne added. As made clear throughout the Edwards parent, this correct between the exidizing gas each that blister copper phase is a fundamental aspect of the procession that patent. Thus, in the closes of the Edwards patent the lance to must be very close to or even below the top satisce o he distercopae districte a race recourse send at the interace referred to the rise step of dains for the Enwerce patent and wice in the line step characters. Worecver the Coverds patent is devoid of any liciteation to the contrary. Incertical Insufficient merely to recognise that the Edwards patent obes not reach positioning the lance tip as required by claim " of the present application. It also is necessary to recognise that the emphasis in the Edwards patent or lance up positioning in fact precisions the positioning required by claim it... That is, contrary to the Edwards patent claim it of the present application requires positioning of the lance up to substantially preclude the castilizer. conacilio ile copoe onase. To ignore this is to ignore an express requirement of the process of the Edvlands patent for a uncarriental aspect of that process. That requirement is: to applieve essentially what the process of claim from the present application is to predicte. It Carrier and the state of the st

Despite the title, the Meissner patent is incorrectly stated in the paragraph commencing at page 3. Ine 3 of the Office Action to teach a mathod of copper refining. It is correctly recognised in the Office Action that the primary consideration in introducing the feed into the molten copper poor in the Melsaner patent is that the depth of the introduction or blowind with respect to the surface of the molten pool be sufficient... However, these matters are incorrectly taken to be relevant to the process of claim 1 of the present application, as detailed in the following regeons:

- Men a their refining of copper used in the title of the Melasher patent normally leters to processing a grude form of copper metal to a higher grade of copper metal. This is het what the Melsaner patent relates to, as made clear by en understanding of columns I and 2 of that gater). More importantly the process of plain it of the present application does not relate to
- 7(b) The Weissner patent, as indicated by all claims of that patent relates to a method of producing copparation a copper suiphide ole, so from matte. This is in complete confrest to The claim it to the present application which relates to a process of to new the confer Supplicements of the property of the process of calm figure processing application. statts with matte (after it has been produced from copper striptice are) as district from starting with one. The processor the Messagar patent in fact produces cooper supplies matter as a president place of the result of the result of the result is a second structure. ecalm: of the present application; the Maleanerscaten coes not provide any discidence tie treatment on conversion of matte.
- The compose of referring to the Melastic state of a support me assert of the the Office Action that "It would have been obvious a tokoptimise the Edwards process by the adjusting the reight of the lance so that the infoduction of gasses is optimized to the , 🚅 process as described by Meissner ... That assertion is incorrect and clearly on item 16 both 📀 🕬 the Edwards patent and the Meissnel patent, since

as is evident from the above paregraph Headed Lance To. Roeitloring ill le contrary to the Edwards patent re adjust the lance to a height wrich does not ensure that a substantial portion of the

lance for any purpose, while Figures 1 and 2 of Meissner show only fixed tuyeres 11 and 17 respectively

the Edwards patent requires the oxidizing gas to contact the copper ohase while the Malasher patent discloses only introducing ore and oxygen-containing gas beneath the surface of said motten copper by injecting directly into the metal by what comprise fixed tuyers — see Figures 1 and 2: claim 1 illines e and 7: claim 5: inee 9 to 12 of step (a) and similarly in step (a) of each of claims 40 and 15 of the Melaaner patent - and as shown in each of Eigures 1 and 2 of that

column 6, line 72 to column 7, line 3 of the Weisbrer patent refers to ande blowing of he fees downward into the notion copies but cteapite reference to a lance, de requirement of the blowing is co COLOR DE LA CERSO EN LA COLOR DE CONTRO DE CON coupel and this similar to the Edwards patent

7(e). Trus ha Ecwarde patel and the Melaster patert are similar in requiring the coxygeratio contact the fredien copper prace. Each of these palents therefore excludes the requirement of claim 1 of the present application on the positioning of the language to equirement bracknowledges in the Office Action se not being suggress or Edwards patent and the noticonect to aggress that the requirement a facility the Malasier patent. As indicated above the Office Action clearly is mounted in case ting that it evold have been down as write optimise the Edwards process by edilisting the neight of the lance so ing the introduction or gaesee is optimised for the process, as described by Melsaner."

3. . The Maissner patent, if its feference to use of a lance, referent column 6, that last The to "ance slowing". At column 7. lines I and 2, there is reference to the depth of nroduction of blowing. The clear indication here is that the lende to is above the morein path and is not submerged les required by both the Edwards patent and the process of calm to the present application). The new technology of top supmerged injection as Ennuica is o penele 1 over 5 of 152 1524 in 185 22 for the stable gal work (our reshipantiel) fine 2 of the Schards petent. Inscript as the Melasier patent apacities blowing by use of a Hance, the lance tip has to be close to the top a made of the motion copper in order for the okypen contening gas to be introduced below the sufface of the molten copper and this

necessitates a thin layer of slap and a thin layer of matter through each of which layers the blowing penetrate into the moltan copper. Blowing penetrate into the moltan copper. As with the Edwards patent, there is little scope for adjusting the height of the lance tip in the process of the Meissner patent, and adjustment to satisfy claim; the their present application is contrary to the express requirements of both the Edwards patent and the Meissner patent. Also, as indicated, Meissner discloses use of a layer of matte between the slag layer and the moltan copper which is contrary to the express requirements of potential application for (a) matte dispersed in a slag phase and there is no sleg copper interface.

p(a), It the objection in paragraph 4b of the Office Action, it is essented that 'Edwards in view of Melsaner teaches the organea of claimata. It understand this to mean that as asserted in paragraph 4a, Claim, It is obvious in view of continuing the process of the Edwards parant, as described by the Melsaner Batent, If of reasons detailed above with traference to the Edwards and Melsaner parents, that assertion of paragraph 4b is incorrect and incorrect assertion. If it is recognised that the compliations of the Edwards and Melsaner parents does not explicitly bearing stap phase depth of from about 700mm to about 122m. It then it suggested that begates the processes and treated compositions are almest, in the absence of process of the edwards in view of Melsaner would have similar elap phase depth of from about 700mm to about 122m. It would have small as eag phase depth of from about 700mm to about 122m and the absence of process and weater of melsaner would have similar elap phase depth of from about 700mm to the reason for such cear that the processes and weater compositions are processes, the reason for such search parameters of the processes and the processes and the processes and the processes of the depth of from about 700mm to 1-7m as elaphed in the Melsaner parent to 1-7m as expected in the processes of the Melsaner parent to 1-7m as expected in the processes of the Melsaner parent to 1-7m as expected in the processes of the Melsaner parent to 1-7m as expected in the processes of the Melsaner parent to 1-7m as expected in the processes of the Melsaner parent to 1-7m as expected in the processes of the Melsaner parent to 1-7m as expected in the processes of the Melsaner parent to 1-7m as expected in the following

in Blatish contrie processes. The Edwards paten also oses a two.

phase sain comprising a slag phase ficating on a continuous

cooper phase so that there is a slag copper inerface, whereas the

Welsamer phase between the Blag and copper phases and no

a la patriconto the treated compositions the process of the Edwards Little of the slag phase and disperses them:

In the slag phase whereas in the process of the Melascer patent:

The created flux are adjectore motericopper.

County of the Co

also, by reactions in the copper phase the process of the Edwards

patent produces copper phase at the slag/copper interface by
reactions involving the love and/or matter in the slag phase which

produce copper from matteraded or produced whereas in the
process of the Melaener patent the added ore is reacted in the
copper phase to produce copper and else to produce matterwards

copper phase to produce copper and else to produce matterwards

untreases the matter phase, while the process of the Melaener

petent also produces slag but does not require the presence of the
slag for operation of the process.

(Printe objection requires the languagh to be positioned so that the gas injected into the slag by the lance does no pass though the lower surface of the slag twinch is an the interace parwaen the sing and the copoer phase) and the gas stored clear for Clame Cantening the couper place. Clame Cand 4 give exemples of sleet depths which enable the constraint on medical into the sleet without contacting the constraint on medical into the sleet without contacting the constraint. tresconstrain on mector into the size without connecting that competitive processor that Apisago anen de la propieta de la compania del compania de la compania del compania de la compania del compania de la compania de la compania del poted that the lance is used for too blowing to plowing main above the top surface of the Slag if the depar of slag se if diam 3 or 2 le sufficient to shable the lange its 10, be sufficient to shable the a pepin or alag with teo playing as in the Messag patent with even inpre-read wiprevent the top older gas from contacting the copper phase contrary to excress requirement of the Messner parent for introducing the ore and oxygen beneath the surface of the implien epper 10 aciliate de teachos explanacion ne viasamente mente mata in relation c Whether or not explicing passes to contact the source phase, the express hecaseary requirement of the Melasner parent and electing Edwards parent on the one hand the express necessary requirement of claims 1.3 and 2 of the present application on the other fiend are munally exclusive. Also: e depth of sleptes in claim 3 or 4 in the process of the Edwards patent does not detract from the requirement of the Edwards patent for the gas to contact the copper phase whereas in claims: ... 3 and 4, the gas is not to contact the copper to the phase so that injection would need to be close to the bottom, or beyond the bottom, of that depth of siag.

tile said little Office Action, in paragraph to that it would be obvious that impreceded as a reductant. It is not indicated whether it is obvious that impreceded because used in the process of the Edwards patent or the Melsener patent. The Edwards patent at a color of the Edwards patent at a col

Apparison at the Committee of Committee of the Committee

incorrect in respect of the Melsaner patent. As indicated at page 13, lines is to 16 of the present application, the lump coal is used because it floats, with the penefit of adding coal being to prevent formation of magnetite in the stag, and thereby avoid foaming of the stag. Thus, in the process of claim 11 of the present application; fump coal is not the just a reductant in the classical sense; rather, it is used for process control. For mitigation of coaning. However, foaming is a disk with the iron based silicate stag required by the present livenion, not with the calcium fernte stags required in the process of the Edwards patent.

Also, the benefit in adding jump coal to the calcium fernte stag of the process of the Edwards patent. Patent is simply to provide further reductant, a quite different outpose. However, this would not correct any of the deliclandes i have highlighted above in relation to paragraphs 4s and a bottline office Action.

patent in view of the Melsaner patent regoned the process of slarm: 1- but coes not tract an patent in view of the Melsaner patent regoned the process of slarm: 1- but coes not tract an incomplication of the process of slarm: 1- but coes not tract an incomplication of the process of slarm: 1 for the numerous reasons. I have detailed above. Also, in consideration of the cambination combines petents; paregraph 5a acknowledges that the combinator does not cambination combines petents; paregraph 5a acknowledges that the combinator does not cliscose the requirement of cambination of the present application for iron based sitiate is a subject to the interpretation acknowledges. Whereas the objections of baragraphs 4a: 4b; and 4b; and 4b; the total to take the self-paregraphs account.

As pointed out above uncerthe treating Slag Composition; the Edwards catent discloses.

accidition terms alloads also system in practice in the 1960s, in the with typical Relice Smith.

Opinion to the stag post of the practice in the 1960s, in the with typical Relice Smith.

Opinion to the stag practice and the stage of the stage o

discloses the use of a favelite financiased sillselp stag and that it would be obvious to use that stag use the use of a favelite financiased sillselp stag and that it would be obvious to use that stag of the Polish publication in the process of the Edwards patent as modified in a secondarie with the Maissner patent. However reams at the 10 of the present application, to a writing the Polish patent. However reams at the 10 of the present application, to a writing the Polish publication makes good the clear deficiency of the combination of the Edwards and Melasners patents reamys to claim 1 (and hence all cleams) of the present application. Mercovers the patents reamys to claim 1 (and hence all cleams) of the present application. Mercovers the companies of the present application in the process of the Edwards patent, the manner related worthal of the Edwards patent. In the process of the Edwards patent, there is a pre-existing place to which the creatematics acceptances to the present the present and at the interhely.

Detween the stag and copper phase, which result in the production of clietor coppers. In the

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suspension reactor of the Poljaryl publication (furnace FSF in each of Figures 1 and 2 of that patent), ore, granular mette; flux and oxygen are charged through a burner at the top of the FSF furnace - Figure 2 shows matte charged through the side but, as indicated in the senience angling pages 5 and 6, if is charged at the top with the other feed. In contrast to the invention of the present application, as well as the processes of the Edwards and Melaaner patents, the ESF furnace of the Pollaryi publication is not a bath type of operation Rather, as the ore, flux and matte particles fall in the ESF furnace, they lead in the solid state, they melt que to the heat of reaction, decompose and react to produce blister copper and slag which are collected and separated. It will be noted that the otingui nomithe FSF reactor of each of Figures | and 2 of the Rollary publication is shown solely as plate, and in contrast of the Edwards patent, along a real property of the or marter of real of the property of the contrast of the contr with a molten copper phase. It is considered that the Polland publication ploydes no guidance in relation to a slag to be used in the process of the Edwards patent. It was well known at the time of the Edwards patent that iron-pased silicate stags were used or produced in the different conferts of other copper producing processes analyst the Edwards patent raters throughout only to calcium ferrite slags for the process of the patent

13 Paragegn 5b of the Office Action makes an assemble which is beginned by unsoping respond on the salid of GaO Fe in the Edwards patent and Fe SiDs in the Polland publication and contends that I would be obvious to use layable with he Fe to SICs ratio of the Rolland publication in the process of the Edward patent. This suggested almos rayalty a useful as a source of for endisticate in the slag. This reasoning sits to explain what banelli hare yould be in the process of the Edwards patent in having a spuce of iron are silica relative to the coment in the chosen calcium ferrite stap to triat process. Also relative to he three ratios specified in claim; it is no logical page to be only on the CAD, it is not be only in the course of the cours of the calcium lenne slag of the Edwards patent and the Felsio, of availte also of the Polany publication. A person skilled in the antwould recognise that the ratios of Casuse Te/SIC/sand Fe/SiC/s describe poundaries to a specific area of a complex terrally onese biagram. The skilled person would further recognise that adding a respective rate from each of two lindependent sources (such as in the case of the Edwards patent and the Pollary publication) is jechnically unsound unless each source is concerned with the same actual slag system (which is not so in that case). Clearly the Pollary loublication goes not provide a basis to asserting that it would have been poyous "toruse the feverite with a Fe/SiO2 ratio of 1367 in the process of Sawards" since the calcium tente stag which the Edwards page tequires is distinct if the level to slag of the Policity I publication. It also is worth noting that the ligures given for the revenue slag of the Policky publication (28/2/2 Fe and 21% SiQ) 18 in a indicate a CaO content of about 50:3%, such that the CaO/SIO, ratio is about 240 and well

Harrist Carl Cardinates Control Control Cartes and Cart Cartes and December 19 years (1999). Secretary des

outside the range of 0.22 to 1.31 specified in claim 1.1 of the present application. In any event, this does not in any way make good the clear deficiencies considered above on the combination of the Edwards and Meissner patents, with of without the Poligra publication; in relation to the process of claim I of the present application

14 Paradraph 5c of the Office Action is correct in its opening sentence. However the fact remains mai the Edwards patent discloses a calcium territe slag and even quiside the range of CaO:SIO; of 5 to 10; the requirement still a for a calcium allicate stag.! This is quite distinct from an iron-based silicate slag, particularly with the range of old in 17 of the present application of 0.22 to 1. the issue is not charof slingly moving along a continuous scale of optimum or workable ranges, but of recognisied that the process of the present invention uses a slac of a recognised type which a different from the recognised slag type for the process of the Edwards patent. Moreover, the Office Action asserts it is well-known that SIO. In the sand teacts with CaQ to form CaS Co. However, incleived that he Edwards patent makes reference to the presence of SIO, from various sources, our specifies a calcium territe slag which is not based on CaSiCu that on Calle Cu, and recessitates a low SIC/ coment such as colowatout 1%; Howayar, there again remains the dear delicencies of the Edwards paters wheller in combination with one of bolh of the Weissner patent and Pollary publication, in respect of the process of claim = (and, hence; each of the claims) of the present application:

turther declare that all statements made hereingd my own knowledge are true and all all statements made on information and celler are believed to be in the land from the land. statements are made with the knowledge and the Will talse statements and the like are pelini, seri io 81 eti 16 1961 notice e etili. Notice serini de comencianamente etili voi elemento States Code; and that such with false statements may leoperdise the validity of this application of any patient issuing thereof.

Supplication of any patient issuing thereof.

(Markus A' Reuter):

(States Code and that such wifu false statements may leoperdise the validity of this

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